EFFECT OF YOGA MODULE ON DISRUPTIVE BEHAVIOR DISORDER ON ADOLESCENTS DWELLING IN JUVENILE JUSTICE INSTITUTIONS - A RANDOMIZED CONTROLLED TRIAL

A

SYNOPSIS

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CONTENTS

S. No.	Title	Page. No.
1.	Introduction	3-4
2.	Review of Literature & Literature Lacunae	4-7
3.	Research Question	7
4.	Hypothesis	7 - 8
5.	Aim & Objectives	8 – 9
6.	Material & Methods	9 -10
7.	Sampling Technique & Sample Size	10 - 11
8.	Algorithm of Study	11
9.	Description of Intervention	12-16
10.	Tools of Data Collection	16-17
11.	Statistical Method	17
12.	Chapterisation	18
13.	References	19-22

ABBREVIATIONS

1. **NCRB** – National Crime Record Bureau
2. **ADHD** – Attention Deficit Hyperactive Disorder
3. **SUD** – Substance Used Disorder
4. **FLAME** – Focus, Letting go, Anger Management, Mindfulness, Exhaling Negativity
5. **TIMBY** – Trauma Informed Mindfulness Based Yoga
6. **DBD** – Disruptive Behavior Disorder
7. **QoL** – Quality of Life
8. **ODD** – Oppositional Defiant Disorder
9. **CD** – Conduct Disorder
10. **PROBE** – Prospective Randomized Open Labeled Endpoint Blinded
11. **RCT** – Randomized Controlled Trial
12. **CODDS** – Conduct and Oppositional Defiant Disorder Scale
13. **CODDS – LPE** – Limited Pro Social Behavior
14. **SDQ** – Strength and Difficulty Questionnaire
15. **SPIN** – Social Phobia Inventory
16. **YQOL – SF** – Youth Quality Of Life – Short Form
17. **SPSS** – Statistical Package for Social Science

Effect of Yoga Module on Disruptive Behavior Disorder on Adolescents Dwelling in Juvenile Justice Institutions - A Randomized Controlled Trial

INTRODUCTION:

"It is easier to build strong children than to repair broken men."

- Frederick Douglass

Children are the future of nation. Healthy development of the children is important not only for them but also for the development of the country. The estimated population of India in 2023 is 1.428 billion, out of which 18.6% are children aged 0- 17 year (*UNICEF India Country Office Annual Report 2023 | UNICEF*, n.d.).Nowadays Psychiatric problem in children is more prevalent worldwide, may be due to family, society or educational environment. Juvenile delinquency is not new in society, it occur in all country either in simple or complex form. Crime committed by age 18 is called juvenile delinquents. This is not only a legal problem but also a psychological problem (Belwal & Belwal, 2016). According to National Crime Record Bureau (NCRB) total 30,555 crimes were committed by the by the minors in 2022 in India. Out of this Chhattisgarh has contributing to 4.7% to all India figure in crime against children, Chhattisgarh has recorded 4469 cases (Drolia, 2016).Various community-based study have been done on the psychiatric problem in adolescents, shows that anxiety, depression, peer problem, conduct disorders, antisocial behavior are prevalent in India. Most of the criminal activity is done due to the psychological disturbance. Studies show that, 70% of youth with juvenile delinquency have diagnosable mental health problems (Snehil & Sagar, 2020). The commoner ones include externalizing disorders like attention deficit hyperactive disorder (ADHD), Substance abuse disorder (SUD) or internalizing disorders like Anxiety, depression, mood disorders, anti - social behavior (Fazel et al., 2008). Early diagnosis and treatment of mental illness results in decrease of this delinquency and better social integration (Jannie et al., 2006).

Yoga is an ancient technique including physical postures; breathing exercise and meditation maintain harmony in body and soul. Currently yoga is emerging for its therapeutic benefits. Various studies have been done to explore the potential of yoga towards physiological and psychological well being. It not only prevents and cures disease but also helps in maintenance of physical health (Kumar, 2016). Studies have on school going students and adolescents, yoga helps in improve emotional regulation & reduce self – esteem (Janjhua et al., 2020), significant reductions in anxiety, depression, and global psychological distress (Frank et al., 2014), cardiac autonomic modulation towards parasympathetic predominance (Kuppusamy et al., 2020). This shows that yoga is an integrated approach for physical, mental and emotional well - being. Increasing recidivism in juvenile is directly related to their mental illness, early diagnosis and treatment may reduce the delinquency in child and also maintain the integrity of the society. Inculcating yoga in early age can reduce the tendency of anti – social behavior, hyperactivity and helps to cope up with the challenges in early age.

REVIEW OF LITERATURE

This is the literature review that available and which is relevant to the present study. This review is also important to define the literature lacunae for further study. There are few studies have been done on juvenile delinquency and effect of yoga on it. Available studies are documented below along with the finding.

S. No.	Title	Author & Year	Study Design & Sample Size	Findings
1.	A pilot study of Yoga with incarcerated youth using the prison yoga project approach.	(Ishaq et al., 2023)	Pilot Study	Yoga FLAME (Focus, Letting go, Anger management, Mindfulness, Exhaling negativity) significantly

				improvement in stress and self -regulation after intervention.
2.	Yoga as complementary care for Young People Placed in Juvenile Institutions – A study Plan	(Kerckes, 2021)	Quasi-Experimental Design N- 120	75 min of yoga practice twice in a week has positive effect on behavior, mental health and self control as well as reduces stress, anxiety and depression.
3.	A pilot study to adapt a trauma – informed, mindfulness – based yoga intervention for justice involved youth.	(Owen-Smith et al., 2021)	Pilot Study N- 10	Trauma – Informed Mindfulness based Yoga (TIMBY) including Yoga posture, breath work and meditation, targeted for the emotional regulation, which is main focus area for this population.
4.	Effect of Pragya Yoga &Pranaakarshan Pranayama on Self Concept level of Juvenile Delinquents.	(Deshmukh, 2021)	Perspective study N - 100	Pragya Yoga and Pranakarshan Pranayama was given to Experimental Group (N- 50) for 45 days, shows significantly improvement of self concept of juvenile delinquents.
5.	Mindfulness and Rehabilitation: Teaching Yoga and	(Barrett, 2017)	N- 10	Mindfulness based interventions significantly improve

	Meditation to Young Men in an Alternative to Incarcerated Program.			cognitive behavioral approaches including anger and impulsive control assessed semi structure open ended interview to participants.
6.	A process evaluation of the art of yoga project mentor program for incarcerated teenage girls.	(Harris & Malone, 2014)	Case Study Design N- 8 (Girls)	These studies describe and evaluate the Art of Yoga Project's Mentor Program. Eight girls and their mentors were followed for period of 12 months after the girls' release from custody. Preliminary results from qualitative content analysis suggest that the program was valuable for the girls who participated
7.	Conduct Disorder among Adolescents: An Intervention Approach through Psycho – Yogic Program	(Agawam & Sao, 2014)	Control Group Design N - 80	8 week of Psycho – Yogic intervention gradually reduces the disruptive pattern of conduct disorder. Also develop the sense of physical and emotional control, leads to better performance to personal level as well as in the society.

8.	Respiratory Pattern in student enrolled in schools for Disruptive Behavior before, During, and After Yoga Nidra Relaxation.	(Jensen et al., 2012)	N – 7	The participants with disruptive behavior (DB) have indicated the reduction of sympathetic arousal associated with more relaxed state. For total group (n- 76) outcome indicate that significant reduction of oppositional behavior and self-reported well-being after 13 week of yoga session.

LITERATURE LACUNAE

There is very few studies have been done on delinquent behavior of the juvenile, and also few studies have been done on the effect of yogic intervention on juvenile delinquents. This study will assess the major cause of delinquency as well as the effect of yogic intervention on recidivism and disruptive behavior of adolescents.

RESEARCH QUESTION

Can Yogic intervention significantly reduce the Disruptive Behavior Disorder (Oppositional Defiant Disorder & Conduct Disorder), Loneliness, Social phobia and Quality of life (QoL) of Juvenile Delinquents?

HYPOTHESIS

Null Hypotheses:

$(H_0)_1$– There is no significant relation between yogic intervention and Disruptive Behavior Disorder (DBD) in adolescents dwelling in juvenile justice institution.

$(H_0)_2$ – Yogic Intervention does not reduce loneliness and Social Phobia in juvenile delinquents.

$(H_0)_3$ – Yogic Intervention does not improve the Quality of Life (QoL) of adolescents dwelling in juvenile justice institution.

$(H_0)_4$ – There is no significance difference in delinquency level of both the group.

Alternate Hypotheses:

$(H_a)_1$- Yogic intervention can significantly reduce the Disruptive Behavior Disorder in adolescents dwelling in juvenile justice institution.

$(H_a)_2$ – Yogic Intervention Can reduce the loneliness and social phobia in juvenile delinquents.

$(H_a)_3$ - Yogic Intervention improve the quality of life (QoL) of adolescents dwelling in juvenile justice institutions.

$(H_a)_4$ – There is significance difference in delinquency level of both the group.

AIM

The current study aims to evaluate the effect of Yogic Intervention on the Disruptive Behavior Disorder (DBD) i.e. hyperactivity, impaired self-control, oppositional and antisocial behavior and Conduct Problem of adolescents dwelling in juvenile justice institution. This study also explores the efficacy of Yogic Intervention on Social Phobia, Loneliness and Quality Of life (QoL) among juvenile delinquents.

OBJECTIVES

Primary Objective:

- To evaluate the efficacy of yogic intervention on Disruptive Behavior Disorder (ODD & CD) on juvenile delinquents in comparison with control group over 3 months.

Secondary Objective:

- To evaluate the effect of yogic intervention on emotional problem and hyperactivity of juvenile delinquents in comparison with control group over 3 months.
- To evaluate the effect of yogic intervention on the social Phobia in juvenile delinquents
- To evaluate the effect of yogic intervention on loneliness and Quality of life (QoL) in juvenile delinquents.
- To compare the disruptive behavior in both the group.

MATERIAL AND METHOS

STUDY DESIGN:

This study will be Parallel – group, prospective randomized open labeled endpoint blinded (PROBE) to assess the effectiveness of Yogic intervention on individual with Disruptive Behavior Disorder of juvenile justice institution.

STUDY POPULATION:

Adolescents age between 11- 17 years of both genders dwelling in juvenile home, diagnosed with disruptive behavior disorder and fulfill the inclusion and exclusion criteria will be recruit for the study.

STUDY SETTING:

The participants will be recruited from the juvenile justice institution from Bilaspur and Raipur District of Chhattisgarh. The developed intervention will be given to recruited participants diagnosed with Disruptive Behavior Disorder (DBD).

This Study will be done on Three Phase –

1. Development and Validation of yogic Intervention.
2. Feasibility Study will be done, to check the feasibility of the intervention to the selected psychological variables.

3. Randomized Control Trial (RCT) will be done along with the appropriate sample size calculation on the basis of Feasibility Study.

➢ INCLUSION CRITERIA:

1. Adolescents diagnosed with disruptive behavior disorder.
2. Adolescents dwelling in juvenile justice with law.
3. Adolescents with age 11- 17 year of both genders.
4. Those who provide assents and their parents provide consent.

➢ EXCLUSION CRITERIA:

1. Adolescents diagnosed with any physical or physiological Disorder.
2. Adolescents currently participate in yoga – based – practices.
3. Adolescents diagnosed with any neurological disorder.

VARIABLES

Independent Variable:

- Yogic Intervention

Dependent Variable:

- Disruptive Behavior Disorder –
    1. Oppositional Defiant Disorder (ODD)
    2. Conduct Disorder (CD)
- Social Phobia
- Loneliness
- Quality of Life (QoL)

SAMPLING TECHNIQUE:

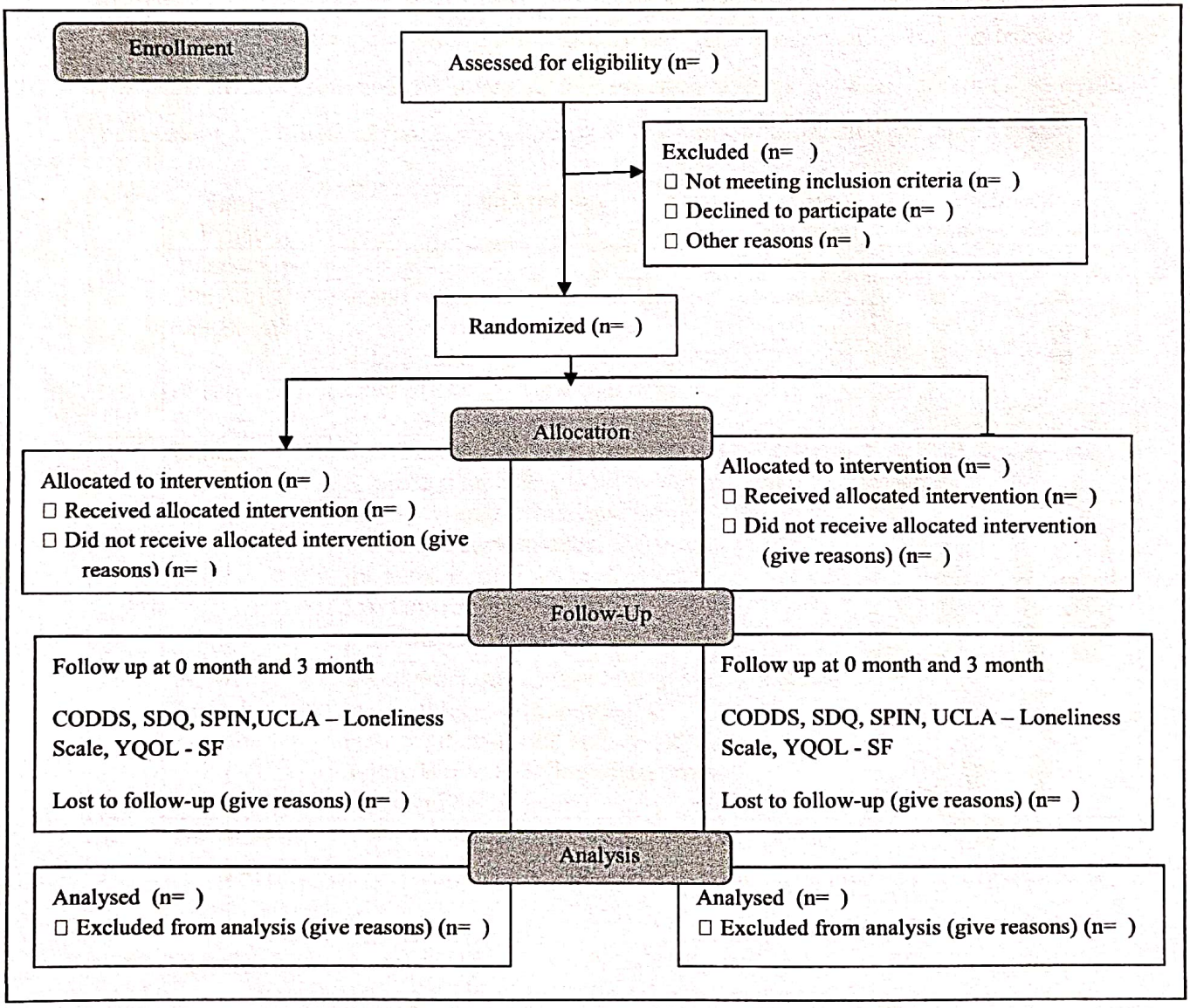
In this study, we will use simple random sampling. All recruited participants will be randomized into an intervention group and a control group, with an allocation ratio of 1:1. All participants will be randomized using computer-generated random numbers using

randomizer.org, it will be done by an independent statistician, and sequentially numbered opaque sealed envelopes (SNOSE), these envelopes will be maintained by a person who is not a part of our study for maintaining concealment. As this study includes yogic intervention which is a behavioral therapy, blinding is not possible.

SAMPLE SIZE:

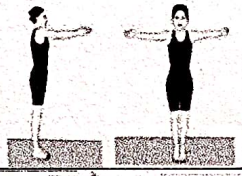
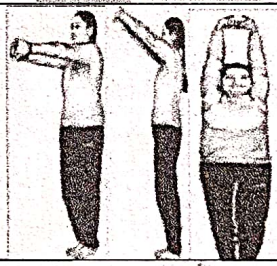
Feasibility study will be done to check the feasibility of Yogic Intervention on selected population for the study. However, the sample size will be calculated after Pilot Study.

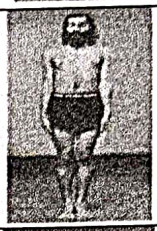
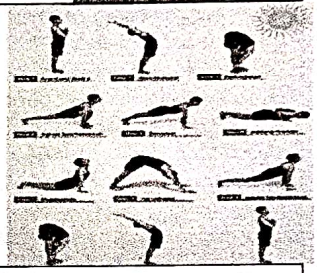
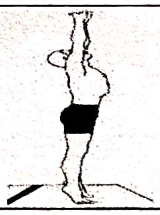
ALGORITHM OF STUDY:

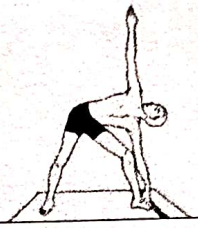
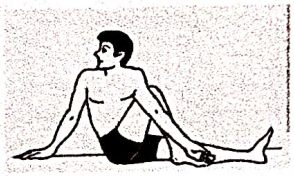

Enrollment
Assessed for eligibility (n=)
Excluded (n=)
☐ Not meeting inclusion criteria (n=)
☐ Declined to participate (n=)
☐ Other reasons (n=)
Randomized (n=)
Allocation
Allocated to intervention (n=)
☐ Received allocated intervention (n=)
☐ Did not receive allocated intervention (give reasons) (n=)
Allocated to intervention (n=)
☐ Received allocated intervention (n=)
☐ Did not receive allocated intervention (give reasons) (n=)
Follow-Up
Follow up at 0 month and 3 month
CODDS, SDQ, SPIN,UCLA – Loneliness Scale, YQOL - SF
Lost to follow-up (give reasons) (n=)
Follow up at 0 month and 3 month
CODDS, SDQ, SPIN, UCLA – Loneliness Scale, YQOL - SF
Lost to follow-up (give reasons) (n=)
Analysis
Analysed (n=)
☐ Excluded from analysis (give reasons) (n=)
Analysed (n=)
☐ Excluded from analysis (give reasons) (n=)

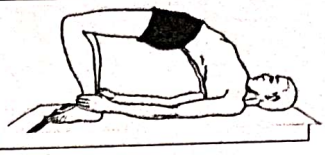
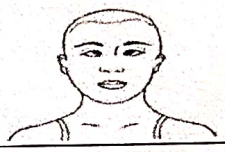
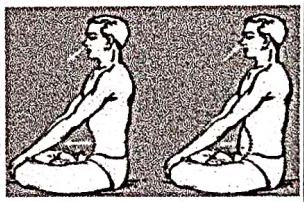
DESCRIPTION OF INTERVENTION

This yoga protocol is developed especially for Psychological& behavioral condition of adolescent, This is a combination of sukshamavyayama(Nagarathna & Nagendra, 2001), (Brahamachari, 1965), yogasana (postures), pranayama (breathing practices) and Mudra (gastures) and Meditation(Saraswati, 2006), (Saraswati, 2008). Sukshma Vyayama Dynamic movements practice will be performed for an active stretch of muscles, these are micro exercises that will be used as pre-practice before moving to the practice of asana. After the completion of micro exercises, the Surya Namaskar(Saraswati, 2009) series will be performed as a full-body warm-up with proper breath awareness in each step. Then Asanas will be performed in three categories (Standing, Sitting, Prone, and Supine). In the next step, Pranayama (Conscious Breathing practices) will be instructed to performed.Relaxation will be given at appropriate intervals between practices to avoid exhaustion and if patients are feeling uneasy at any point of time, they can take a rest.

S.N.	Name of Practice	Instructions	Time Duration	Pictorial Demonstration
1.	**Warm Up**		**3 min.**	
a.	Hand in & out Breath	Stand erect and while inhaling spread your arms sideways. While exhaling bring the arms in front of chest, palms touching each other.	5 rounds	
b.	Hand Stretch Breath	Stand erect, interlock your fingers & place it on chest, inhale extend the arms, now exhale and bring the palms back to chest. Perform the same in horizontal, forehead level and above the head positions.	3 rounds each	
c.	Ankle Stretch Breath	Stand erect, now place both palms on the thighs, with inhalation raise your arms and stretch your ankle. While exhaling bring your arms and heels down	5rounds	
2.	**Sukshama Vyayam**		**3 min.**	

a.	Buddhi & Dhriti Shakti Vikasak	Feet together, stand erect and tilt the head back far as you can with eyes wide open. Concentrate on crown of head. Vigorously inhale and exhale through nose.	5 rounds	
b.	Smaran Shakti Vikasak	Feet together, stand erect with normal head position, eyes focusing 5 feet away from toes. Concentrate on brahma randhra. Vigorously inhale and exhale through nose.	5 rounds	
c.	Medha Shakti Vikasak	Eyes closed. Feet together, stand erect. Let your chin rest to chest.	5 rounds	
3.	**Surya Namaskar**	It consists of 12 steps. Perform all with body and breath awareness.	5 rounds, **5 min.**	
	Relaxation		**2 min.**	
4.	**Asana**		**15 min.**	
(a)	*Standing Asana*		*(5 min.)*	
(i)	Tadasana	Stand erect, interlock fingers, with inhalation stretch the arms up, heels up, with exhale heels down palms on head.	5 rounds	
(ii)	Tiryakatadasana	Stand erect,while inhaling raise the arms up arch back a little. Exhale back to initial.	5 rounds	
(iii)	Katichakrasana	Stand erect, open the arms sideways at shoulder level, and while exhaling twist your spine as much as possible, with inhale come back to initial.	5-10 rounds both side	

(iv)	Vrikshasana	Stand erect, spine straight, raise the arms up and join the palms over the head, place your right foot on your left thigh, and press right heel against upper thigh.	3-5rounds both side	
(v)	Trikonasana	Stand erect feet 1 meter apart, turn right foot towards right, raise your arms sideways at shoulder level, now slowly bend sideways, look upward.	5-10 rounds both side	
(b)	*Sitting Asana*		(4 min.)	
(i)	Vakrasana	Sit on floor with straight legs, now bend your left leg and place the left foot beside right knee with inhale raise your arms and while exhaling twist to left, place the right arm by the outer side of left knee, take the left hand behind and look back.	5-5 rounds each side	
(ii)	Pashchimottanasana	Sit in dandasana. Now with inhalation raise your arms up and with exhalation slowly bend forward catch your toes and try to touch your forehead to the knees.	5 rounds	
(iii)	Shashankasana	Sit in vajraana, while inhaling stretch your arms up, and with exhale bend forward.	5 rounds	
(c)	*Prone Asana*		(4 min.)	
(i)	Bhujangasana	Lie down with abdomen support, place the palms beside the chest, with inhalation slowly lift the head, chest and abdomen.	5 rounds	
(ii)	Dhanurasana	Lie down with abdomen and bend your knees then catch your toes with hands, with inhalation bend your body like a bow.	3 rounds	
(iii)	Shalabhasana	Lie down with abdomen support chin touching the floor, place your palms under your thighs then slowly try to lift your legs up.	5 rounds	

(d)	*Supine Asana*		(2 min.)	
(i)	Setubandhasana	Lie on back, bend the knees, catch the ankles with hands, with inhalation lift the hips, arch your spine upwards	3-5 rounds	
(ii)	Matsyasana	Lean backward, with arm support rest the crown of head on floor, arch the spine back & palms on the thighs.	35 rounds	
	Relaxation		**2 min.**	
5.	**Pranayama & Mudra**	Only 2 pranayama daily	**15 min.**	
(i)	Shambhavi Mudra	Sit in a comfortable pose with spine erect and gently try to gaze at the eyebrow center (third eye chakra).	3-5 rounds	
(ii)	Yogic Breathing	Sit in a comfortable pose,with inhale expand the abdomen then expand chest upwards, now shoulder and collar bone should move up, now collar bone move down, contract chest then empty the stomach and draw it near to spine.	3 rounds	
(iii)	Ujjayi Breathing	Sit comfortably, keep spine straight, take a deep breath in resulting expanded abdomen and breathe out (resulting contraction of abdomen) forcefully through nose.	10 strokes, 3 rounds	
(iv)	Nadishodhana	Sit in a meditative pose, adopt pranav mudra block right nostril using thumb & inhale through left then hold breath for a while then exhale with right, then block left nostril using ring finger & inhale through right then hold & exhale through left.	10 rounds	
(v)	Bhramari	Sit comfortably, raise the arms sideways, put index fingers on the ears, deep inhale & exhale while making a deep, steady humming sound.	3-5 rounds	

6.	**Guided Meditation**	Lic down on your mat in complete relaxed position, be aware of your breathing and follow the instructions given by instructor.	**5 min**	

Note:

1. Intervention will be given for 5 days in week, up to 12 weeks.
2. 5 days of yoga practice including Asanas, Pranayama, and Mudra.
3. The above intervention will be given for 3 months, 5 days in a week, and 45 mins daily.

TOOLS OF DATA COLLECTION

S. No.	Tools for Assessment	Constructed By	Description of Tools
1.	Conduct and Oppositional Defiant Disorder Scale **(CODDS)** for disruptive behavior disorder & CODDS – LPE for Limited Pro – social Emotion	(Raine et al., 2022)	**CODDS – Child Self Reported** ➢ Consist 26 item related oppositional and conduct behavior of child (8- 18) ➢ High score reports the high level of oppositional and conduct disorder in children. **CODDS – LPE: Child Self-Reported** ➢ This consists 12 item reported lack of remorse/guilt; callous/ lack of empathy; unconcerned about performance; shallow/ defiant affect ➢ Low score indicates a lack of pro-social emotions.

2.	Strength and Difficulty Questionnaire **(SDQ) - Youth Reported**	(Goodman, 1997)	**SDQ – YR – 1 (11- 17 Year)** ➢ This consists of 25 item divided into 5 subscales: emotional symptoms; conduct problem; hyperactivity/inattention; peer relationship & pro social behavior.
3.	Social Phobia Inventory **(SPIN)**	(Connor et al., 2000)	**SPIN – Self Rated** ➢ This consists of 17 items which measures spectrum of fear, avoidance and physiological symptoms of adolescents.
4.	**UCLA – Loneliness Scale**	(Russell, 1996)	**UCLA – Loneliness Scale (Version – 3)** ➢ This scale consists 20 item measures that assesses hoe often a person feels disconnected from others. This scale is appropriate for both teens and adult.
5.	Youth Quality of Life Short Form **(YQOL - SF)**	(Seattle Quality of Life Group, n.d.)	**YQOL – Short Form** ➢ This scale consists of 16 item which measures generic and specific quality of life of youth age 11- 18 years.

STATISTICAL METHOD

The data will be extracted, followed by tabulation in an Excel sheet. All the analysis will be done with the help of SPSS software. Based on nature and distribution of variables, appropriate tests of will be applied. Data will be analyzed as per protocol and intention to treat method.

CHAPTERISATION

Chapters	Title
Chapter - 1	Introduction
Chapter - 2	Review of Literature
Chapter - 3	Research Methodology
Chapter - 4	Result and Discussion
Chapter - 5	Conclusion

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